

REF: 05 DESIGN FEATURES

FEATURE 1: THE GREENHOUSE



A greenhouse creates a new living or working area, in fact a space that will remove the dividing line between inside and outside, so that each environment is enriched by the awareness of the other.

It can extend your home on one or more levels, opening it up to light, sun and the surrounding landscape.

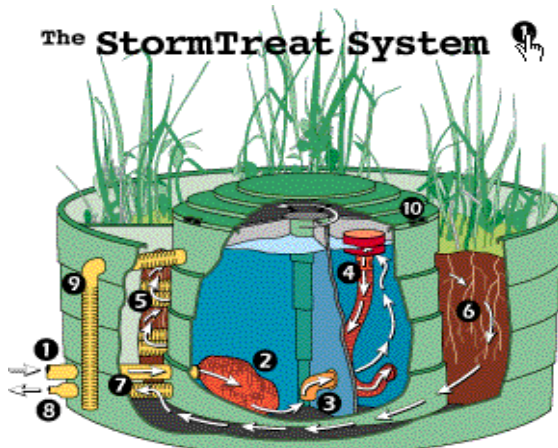
Imagine a conservatory design studio, or a greenhouse cum poolside lounge!

On top of all that, come rooflights as atriums, combining natural light with a moderating micro-climate.

Thus, much contrary to popular belief, greenhouses do not serve just to provide the heating effect of the "greenhouse" effect and heat up the house interior (which is its primary technical function), but also to enhance one's lifestyle and replenish the soul.

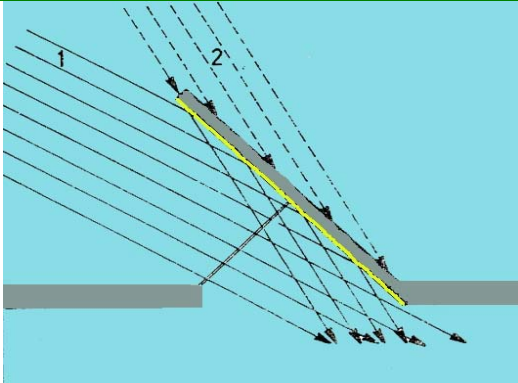
FEATURE 2: RAINWATER COLLECTION AND TREATMENT

Surface water can easily be utilised in this EcoHouse design to reduce the domestic water consumption expenses. Being earth-sheltered, the water tank is protected from extremely low or high temperatures. The earth falls around the tank are profiled in such a way as to funnel the rainwater into the tank.



The collected water is then thoroughly treated for domestic consumption using the state-of-the-art StormTreat System™ produced by StormTreat Systems, Inc. Rainwater is treated by 100% biological means and is 100% safe for domestic use.

FEATURE 3: REFLECTING/INSULATING SKYLIGHTS



The windcatches provided for natural cross-ventilation are provided with skylights to serve as additional natural lighting sources. The skylights should be directed to face your prevailing winds and/or natural light sources.

LEGEND:

- 1 Sunlight reflected into the building in the morning/afternoon or the winter season
- 2 Protection against excessive sunlight

They are designed with an inner reflecting surface attached to an insulating board. The former reflects sunlight into the home, the latter prevents heat losses from inside to the outside.

FEATURE 4: SOLAR DOMESTIC HOT WATER (SDHW) SYSTEMS

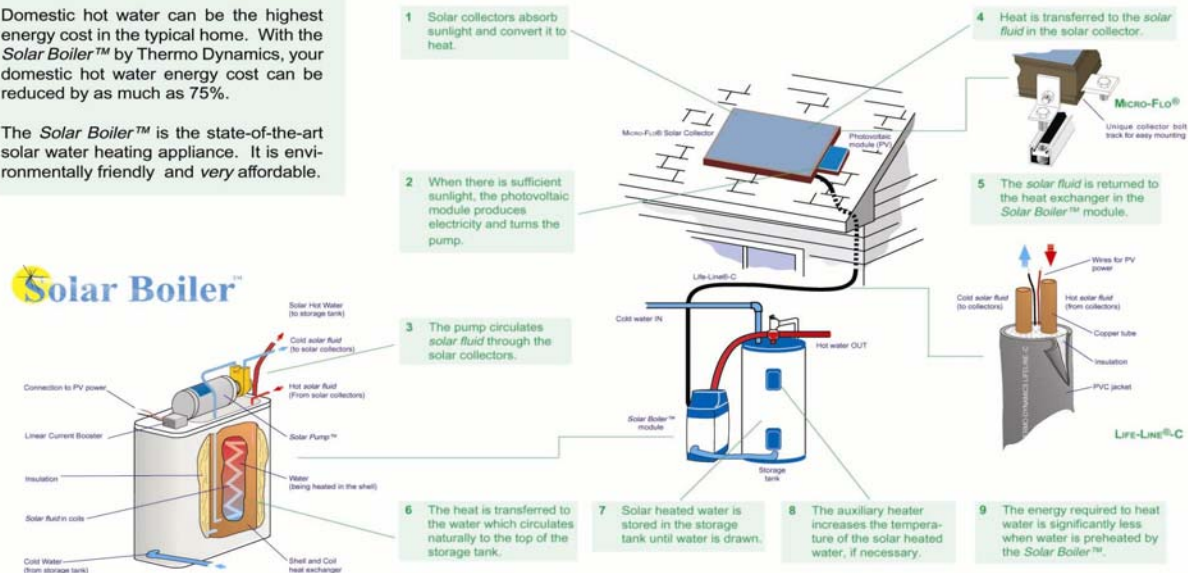
Solar water heaters provide you with several benefits over conventional water heaters. You will reduce your hot water heating costs. You will also be directly reducing greenhouse gas emissions (carbon dioxide, CO₂, released into the atmosphere), thereby contributing to a healthier environment. The energy you can expect to save by switching to a solar water heater depends on several factors such as the size of the collectors and storage tank, appliance efficiency, amount of sunlight in your region and, very importantly, the amount of water you use. A typical solar hot water system will reduce annual energy costs by 40 to 50%. You can expect that a solar water heater will provide you with 1500 to 3000 kWh of energy per year, depending on your hot water usage and regional climate.

Solar Saves!!

Domestic hot water can be the highest energy cost in the typical home. With the *Solar Boiler™* by Thermo Dynamics, your domestic hot water energy cost can be reduced by as much as 75%.

The *Solar Boiler™* is the state-of-the-art solar water heating appliance. It is environmentally friendly and very affordable.

How the *Solar Boiler™* works



Most solar water heaters consist of solar collectors mounted on the roof of a house; a pump for circulating the heat transfer fluid; a heat exchanger for transferring the heat to storage; and one or two storage tanks for storing solar-heated water for periods when there is no sun.

The Thermo Dynamics Solar Boiler™, used in our EcoHouse designs, is a revolutionary concept in solar domestic water heating systems. It is a solar preheat system using the external Side-Arm™ heat exchange system pioneered by Thermo Dynamics and the Micro-Flo® collector system for unsurpassed heat exchange efficiency.

FEATURE 5: HVAC AND IAQ

Even if you don't live in an ultra-efficient home, you have probably spent some time recently weather stripping doors and windows, caulking around frames, filling walls and attics with insulation.

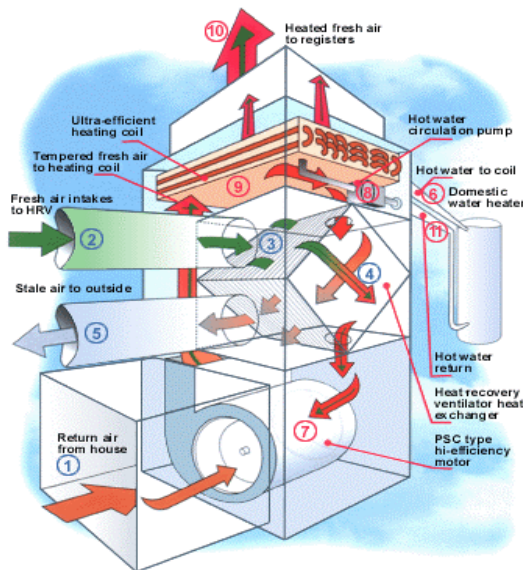
Yet our homes today are built to keep fresh air out. All in the name of energy efficiency.

As a result, you've cut your heating and air conditioning costs. Excellent. But at the same time you have made it more difficult for fresh air to move into your home and for stale air to move out.

The indoor air quality has deteriorated, and that makes the home environment uncomfortable and unhealthy.

The brilliant Lifebreath Clean Air Furnace®, manufactured by Nutech Brands Inc. uses a domestic water heater as its heat source. The efficient system creates a healthier, more comfortable home environment while lowering energy bills. This combination heating system results in higher efficiency ratings than are possible with conventional furnaces i.e. - lower fuel costs for you.

It offers a solution to protect the occupants from the pollutants in your eco-home while reducing heating and air conditioning costs and has a built-in Heat Recovery Ventilator (HRV) that replaces stale air with fresh.



The Lifebreath Furnace brings outdoor air through the built-in HRV, ensuring fresh, healthy heating of your home - all for the cost of a high efficiency furnace. Although your eco-home will not always require heating, the ventilation component of the HRV works year-round to provide a constant stream of fresh air to every room of your house.

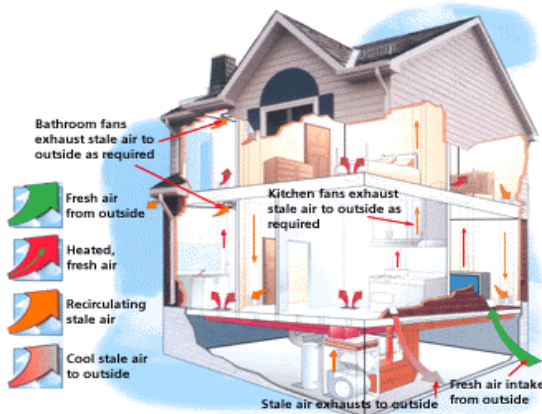
Lifebreath operates safely and quietly. Instead of the periodic bursts of hot air distributed by conventional furnaces, a steady stream of warm air is released throughout the house - reducing drafts, and creating a more even temperature distribution. The atmosphere in your EcoHouse will be noticeably improved.

This heating system provides constant ventilation and a steady stream of warm air for the healthiest, most comfortable home environment possible. This occurs with a system efficiency of up to 90%.

The Clean Air Furnace allows for the addition of a plenum-mounted air conditioner. As long as the furnace is controlled by a thermostat with a fan auto/on switch, users can select heating or cooling with ventilation to meet your climate control needs in every season.

LEGEND:

1. Warm, stale air from the home is returned to the Lifebreath Clean Air Furnace.
2. Outdoor air travels through the fresh air intake and is brought into the integral HRV
3. The fresh and stale air pass through opposite sides of the HRV's aluminium heat exchange core.
4. Heat from the stale air is transferred to the fresh air.
5. Stale air is exhausted outside.
6. Hot water is sent from the water heater to the furnace heating coil.
7. A PSC type high-efficiency fan blows the tempered fresh air from the HRV into the coil.
8. The circulation pump distributes hot water through the coil.
9. The circulating hot water heats the air to the desired temperature.
10. Warm, fresh air is distributed to registers throughout the EcoHouse.
11. The hot water travels through the coil and returns to the water heater for domestic use.



The compact Clean Air Furnace uses hot water as its heat source. Water is pumped from your home water heater to the furnace heating coil. A fan with a PSC high-efficiency motor blows the fresh air from the HRV into the heating coil where the circulating water warms the air. Water leaves the heater, travels through the hot water circulation pump, and returns to the water heater. As the water travels through the furnace's heating coil, air is warmed and sent to registers throughout the house.

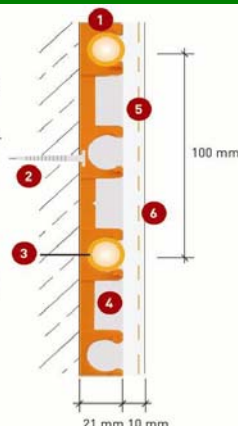
The HRV removes stale, contaminated air from inside the EcoHouse to the outdoors. At the same time, it draws fresh, oxygen-laden air from outside and distributes it throughout the house. Polluted air is constantly being replaced by an equal quantity of fresh, clean air.

FEATURE 6: SYSTEM WALL HEATING & COOLING

System Wall Heating Type SWH2

21 mm structural height.
For exterior walls of brick construction with a plaster-suitable background and a U-value smaller or equal 0.3 W/m²K or for interior walls.

- 1 Resilient bar
- 2 Fastening with nail peg
- 3 Varioclimat Pipe 16x2
- 4 Eco-Heating plaster
- 5 Plastering lattice
- 6 Finishing plaster (provided by customer)



System Wall Heating and Cooling, produced by the Austrian firm Variotherm and used in our EcoHouse designs, increase the human comfort level considerably. They produce longwaved horizontal infrared radiant heat which provides ultimate comfort, just like sun warmth which is also radiant heat. Alternatively, they can be used for cooling throughout the summer season. Unlike heat from conventional heating systems radiant heat does not travel upwards and dust circulation is avoided, so they provide a healthy room climate. Heating operates with lowest possible water heating temperature, which means it can be provided by the Solar Domestic Hot Water (SDHW) Systems. It is a Large-area low temperature system, and through use of wall storage, provide exceptional energy saving and cold water circulation converts wall heating into wall cooling in summer.

FEATURE 7: CENTRAL VACUUMING SYSTEMS (CVS)

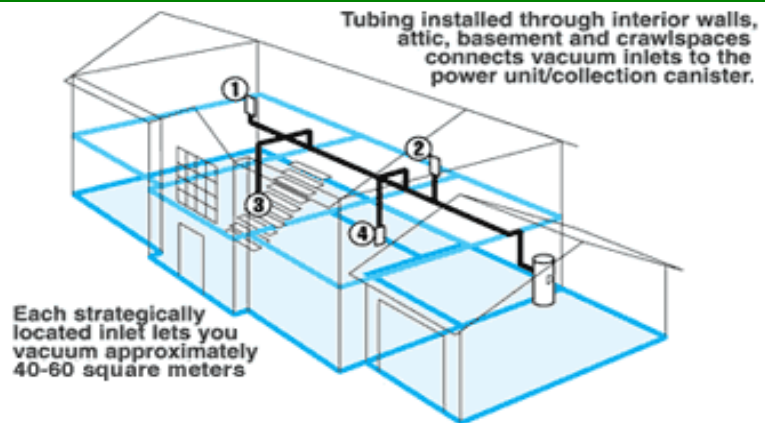
Recent research conducted has shown that a CVS Central Vacuuming System provides relief from major allergy symptoms...as much as 61%!

Unlike conventional vacuums that can recirculate dust, a CVS removes 100% of contacted dirt, dust mites, dander, pollen and other allergens from the living areas in your EcoHome...to relieve the misery caused by allergies.

A Beam Central Vacuum System, employed in our EcoHouse designs, uses tubing installed in the walls of your home to carry dirt, dust and allergens away from living areas to a collection canister in the garage or basement.

To activate the system, you simply need to plug in the lightweight hose into the nearest wall inlet (an average home has three inlets). Then, you attach your choice of cleaning tools and you are ready to go. The flexible nine meter hose lets you move from room to room for fast, easy whole-house cleaning convenience. a CVS is quiet, as well, since the power unit is located in the utility room.

[Find EcoHouse-Plans \(Find ecological home plans at EcoHouse-Plans.com\)](http://EcoHouse-Plans.com)



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